

ABSTRACT OF THE DISCLOSURE

The thermally treated piece of drilling equipment is made by placing a device within a thermal control apparatus and subjecting the device to two thermal cycles. The first thermal cycle involves introducing a cryogenic material into the thermal control apparatus decreasing the device temperature, while preventing over-stressing of the device, to a first target temperature at a first temperature rate. The device temperature is then increased to a second target temperature at a second temperature rate. The second thermal cycle involves introducing the cryogenic material to decrease the device temperature, while preventing over-stressing, to a third temperature at a third temperature rate ranging. The temperature is then increased to a fourth temperature at a fourth temperature rate. The result of the process is a piece of drilling equipment without fractures and enhanced structural characteristics.

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